

A SECOND CHARACTER DISTINGUISHING
HETEROTHECA S. STR. FROM CHRYSOPSIS
(COMPOSITAE: ASTEREAEE)

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The sole criterion of the absence of pappus bristles in the ray florets of *Heterotheca* Cass. and their presence in *Chrysopsis* has been used traditionally to separate the respective genera. An examination of numerous specimens of all included entities has revealed another character which also seems consistently to separate the two groups if the earlier cauline leaves have been retained on the specimens. The lowermost leaves of most *Chrysopsis* and of all *Heterotheca* s. str. species are distinctly petiolate and the upper ones sessile. In *Chrysopsis* there is simply a progressive reduction of the petiole length with no enlargement of petiole bases from the lower to upper leaves (Fig. 4-8). But in *Heterotheca* s. str., the sequence from the lower petiolate to the upper sessile leaves is characterized by progressively more expanded petiole bases in successive leaves, resulting in a gradual proximal to distal lamination of the petiole (Fig. 1-3). The radical and very lowermost cauline leaves have long petioles without expanded bases. The leaves just above these begin to reveal small laminar petiole bases. These petiole bases or auricles become increasingly more expanded and conspicuous in successive leaves to merge eventually with the leaf blade proper obscuring all traces of the petiole.

The peculiar lyrate to panduriform shapes of the middle leaves of this petiole lamination series in *Heterotheca* s. str. (Fig. 1-3) are quite distinctive of the group, never being present in any *Chrysopsis* species. This characteristic leaf sequence is apparent in all *Heterotheca* entities, but of course is not distinguishable on herbarium specimens if none of the lower petiolate leaves have been retained. In large, well-developed *Heterotheca* plants, especially in dense stands, most of the lower leaves may be deciduous and the remaining leaves predominantly of the upper sessile type.

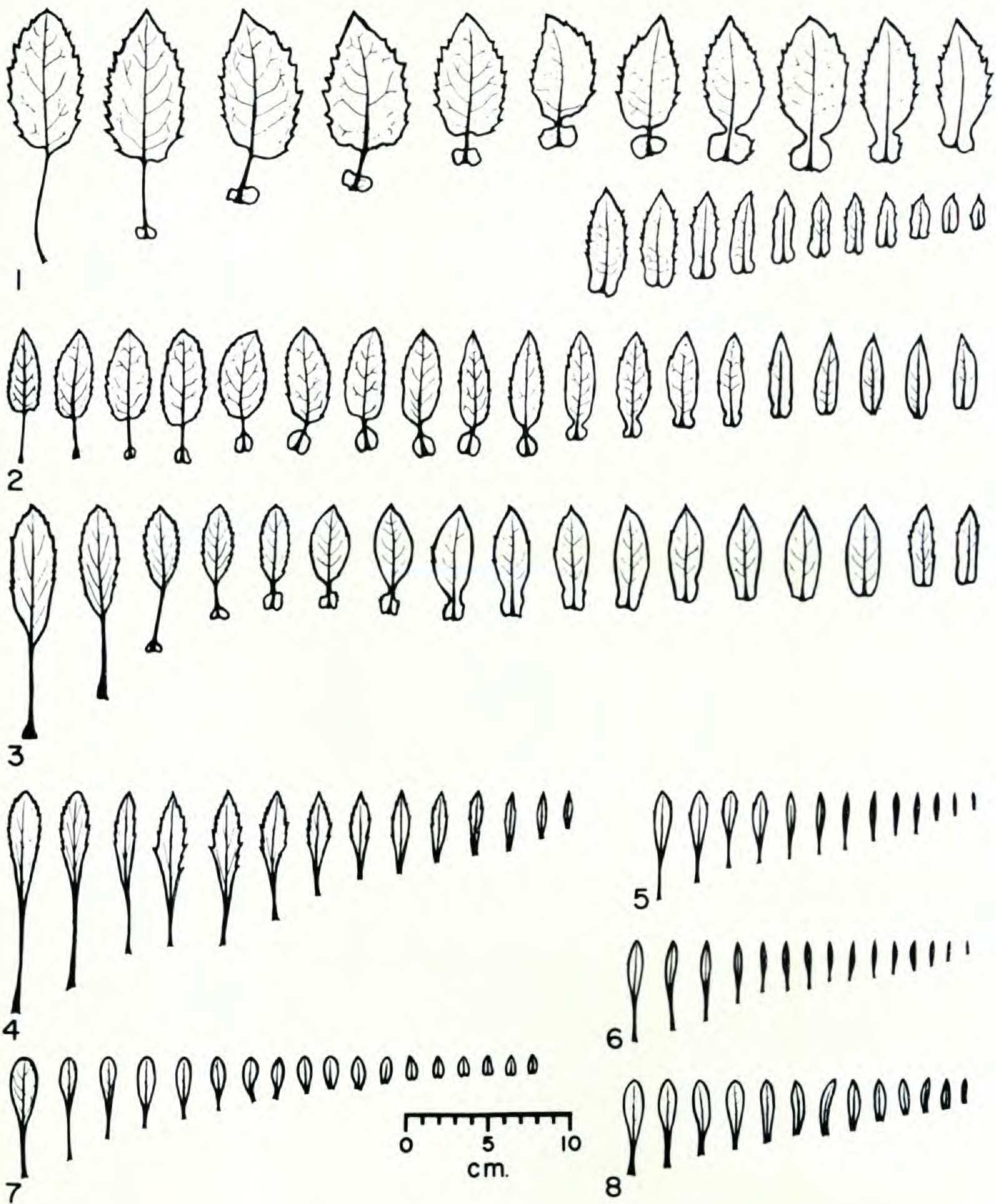


Fig. 1-8. Comparative series of basal to upper leaves in various *Heterotheca* and *Chrysopsis* species. Fig. 1. *Heterotheca latifolia*, Clark County, Ga., G. L. Plummer. Fig. 2. *H. subaxillaris* Tift County, Ga., G. L. Plummer. Fig. 3. *H. psammophila*, Cochise County, Ariz., V. L. Harms 1849. Fig. 4. *Chrysopsis camporum*, St. Louis County, Mo., R. L. McGregor. Fig. 5. *C. berlandieri*, Harvey County, Kans., V. L. Harms 1324. Fig. 6. *C. stenophylla*, Woods County, Okla., V. L. Harms 1995. Fig. 7. *C. fulcrata*, Dona Ana County, N. Mex., V. L. Harms 1839. Fig. 8. *C. villosa*, Jackson County, S. Dak., V. L. Harms 2149.

Yet in the field it is usually possible to find at least some shoots of almost every plant which reveal traces of this very characteristic petiole sequence. Various field botanists have previously noted and used the peculiar basal lobing of the petioles as a field character to help distinguish local *Heterotheca* species. But this attribute has apparently never been recognized as a consistent diagnostic feature characteristic of all *Heterotheca* s. str. species in contrast to those of *Chrysopsis*.

While this second diagnostic character improves the status of *Heterotheca* s. str. as a natural group and might possibly be construed as enhancing the continued generic separation of the two groups, such a conclusion is hardly warranted. Foliage characters just as diverse, if not more so, separate the section *Pityopsis* (*C. graminifolia* and its allies) from the other sections of *Chrysopsis*. Both morphological data (Shinners, 1951, and Wagenknecht, 1960) and cytogenetic evidence (Harms, in press) seem to point to the congeneric status of *Heterotheca* and *Chrysopsis*, in which case the peculiar petiole lamination sequence reported here would constitute another sectional character, along with epappose ray florets, serving to distinguish *Heterotheca* sect. *Heterotheca* from the other sections of an enlarged genus.

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